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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/419,798	10/18/1999	TOSHIHIKO MIURA	1004.1063/JD	1817

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EXAMINER	
JACKSON, MONIQUE R	
ART UNIT	PAPER NUMBER
1773	16

DATE MAILED: 06/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

A8-16

Office Action Summary	Applicati n No.	Applicant(s)	
	09/419,798	KAWASAKI ET AL.	
	Examiner	Art Unit	
	Monique R Jackson	1773	

-- The MAILING DATE f this c mmunication appears on th cover sheet with the corresp ndence address --

Peri d f r Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 March 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. Applicant's request for reconsideration filed March 24, 2003 has been entered. Claims 1-6 are pending in the application.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sagawa et al in view of Nakayama et al (USPN 5,154,978) for the reasons recited in the prior office action and restated below.

4. As discussed previously, Sagawa et al teach the production of a resin-bonded rare-earth magnet coated with a powder layer and resin layer wherein the magnet is formed from Fe-Nd-B powder having a particle size of 100μm or less mixed with an epoxy resin and compacted under pressure to produce a resin-bonded magnet (Abstract; Example 5.) The magnet is coated with a 1μm resin layer and a powder layer ranging in thickness from 5-10μm, wherein the resin is a thermosetting resin and the grain size of the powder material (*filling material*) depends of the size of the work piece to be coated, the thickness of the coating, and the material of the powder, and is usually within a range from 0.05 to 500μm, and more preferably 0.1 to 50μm wherein the finer the powder material is, the smaller the striking force is and the surface roughness is lessened (12:53-68.) The resin layer is preferably applied first to bind the powder layer to the surface of the work piece however it is possible to impregnate the resin from outside the powder coating into the continuous clearances of the powder skeleton structures (7:56-8:12.) Sagawa et al teach that the powder material and resin are forced into the pores of the resin-bonded magnet,

thereby effectively sealing the pores on the surface of the magnet and providing an improved corrosion resistant surface coating (10:5-23.) A protective resin coating may also be applied on the surface of the coating to enhance the strength and corrosion resistance of the entire coating and smoothen and enhance the appearance of the coating surface wherein the protective coating layer comprises the same resin as the coating layer such as a thermosetting resin and has a thickness desirably from 0.5 to 300μm (9:27-47.) It is particularly noted that Sagawa et al specifically teach that the powder layer can be applied first followed by impregnation of the resin layer (7:56-8:12), that the powder material and resin are forced into the pores of the resin-bonded magnet thereby effectively sealing the pores on the surface of the magnet and providing an improved corrosion resistant surface coating (*a filling material used to fill in depressions on a surface of said magnet and fixed with thermosetting resin*) (10:5-23), and that a protective resin coating may also be applied on the surface of the coating to enhance the strength and corrosion resistance of the entire coating and smoothen and enhance the appearance of the coating surface wherein the protective coating layer comprises the same resin as the coating layer such as a thermosetting resin (*a corrosion inhibiting coat made from a synthetic resin applied to the surface*) and has a thickness desirably from 0.5 to 300μm (9:27-47.)

5. Though Sagawa et al teach that the finer the powder materials, the smaller the striking force and lower the surface roughness, and that the protective coating assists in smoothening the surface of the magnet, Sagawa et al do not teach the surface roughness of the magnet as instantly claimed. However, it is noted that with regards to resin-bonded magnets, <u>the surface roughness is an important characteristic of the performance of the magnet with regards to corrosion resistance of the magnet as taught by Nakayama et al wherein an improvement in corrosion</u>

resistance can be obtained by reducing the surface roughness of the magnet (Col. 2, lines 50-60.) Nakayama et al further teach that a surface roughness of about 1 micron or less is preferred (Col. 2, lines 54-60.) Therefore, one having ordinary skill in the art at the time of the invention would have been motivated to provide the surface of the magnet taught by Sagawa et al with a small surface roughness, preferably less than one micron, because, as taught by Nakayama et al, a decrease in surface roughness provides improved corrosion resistance. Alternatively, it would have been obvious to one having ordinary skill in the art to determine the optimum surface roughness to provide desired improvement in corrosion resistance for the invention taught by Sagawa et al utilizing routine experimentation to determine the optimum powder material size to provide the desired surface roughness.

6. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sagawa et al in view of Nakayama et al and in further view of Strnat for the reasons recited in the prior office action and restated below.

7. The teachings of Sagawa et al in view of Nakayama et al are discussed above. Though Sagawa et al teach particle sizes of the metal alloy powder and the filler material particles that encompass or overlap the instantly claimed ranges, Sagawa et al do not specifically teach limiting the particle size of the metal alloy powder and the filler material particles to 20-300μm and 0.1-15μm, respectively. Sagawa et al further teach that the particle size of the powder material is based on the size of the work piece, the thickness of the coating, and the material of the powder and is also a result-effective variable that affects the surface properties of the resulting coated product. Further, in terms of the metal alloy powder, Strnat teaches that the

particle size of the metal alloy particles used to form a rare-earth magnet body may vary based on the particular metal alloy and that typically the alloys are used in the form of powders having a particle size between 1 and 50μm and up to 100μm or more based on the particular metal alloy and desired magnetic properties (4:1-54.) Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to utilize routine experimentation to determine the optimum particle size for the powder material as taught by Sagawa et al and optimum particle size for the metal alloy powder for the magnet body as taught by Strnat et al based on the particular powder materials utilized for the invention taught by Sagawa et al given that the particle size is a known result-effective variable.

Response to Arguments

8. Applicant's arguments filed 3/24/03 have been fully considered but they are not persuasive. The Applicant first argues that Nakayama et al, relied upon by the Examiner, does not teach a surface roughness of less than 3 microns as instantly claimed. However, as discussed above, Nakayama et al specifically teach that the surface roughness of a magnet is an important characteristic of the performance of the magnet with regards to corrosion resistance of the magnet wherein an improvement in corrosion resistance can be obtained by reducing the surface roughness of the magnet (Col. 2, lines 50-60.) Hence, Nakayama et al teach that the surface roughness is a result-effective variable. Nakayama et al further teach that a surface roughness of about 1 micron or less, which falls within the instantly claimed range, is preferred (Col. 2, lines 54-60.) Therefore, the Examiner maintains that one having ordinary skill in the art at the time of the invention would have been motivated to provide the surface of the magnet taught by Sagawa et al with a small surface roughness, preferably less than one micron, because, as taught by

Nakayama et al, a decrease in surface roughness provides improved corrosion resistance. Alternatively, it would have been obvious to one having ordinary skill in the art to determine the optimum surface roughness to provide desired improvement in corrosion resistance for the invention taught by Sagawa et al utilizing routine experimentation to determine the optimum powder material size to provide the desired surface roughness.

9. Next the Applicant argues that the Examiner allegedly relies upon Col. 5, lines 5-23, of Sagawa et al to teach a filling material fixed with a thermosetting resin wherein the filler material has a particle size between 0.1 and 15 microns filler but that Col. 5, lines 5-23 of this reference do not teach or suggest a particle filler. However, the Examiner first notes that the prior office action, as well as paragraph 4 above, never refers to Col. 5,lines 5-23. With regards to the filler material fixed with a thermosetting resin wherein the filler material has a particular particle size, the Examiner referred the Applicant to Col. 7, line 56-Col. 8, line 12; Col. 9, lines 27-47; Col. 10, lines 5-23; and Col. 12, lines 53-68; wherein Sagawa et al specifically teach that the powder layer can be applied first followed by impregnation of the thermosetting resin layer (7:56-8:12), that the powder material and thermosetting resin are forced into the pores of the resin-bonded magnet thereby effectively sealing the pores on the surface of the magnet and providing an improved corrosion resistant surface coating (*a filling material used to fill in depressions on a surface of said magnet and fixed with thermosetting resin*) (10:5-23); and that the grain size of the powder material (*filling material*) depends of the size of the work piece to be coated, the thickness of the coating, and the material of the powder, and is usually within a range from 0.05 to 500μm, and more preferably 0.1 to 50μm, which includes the instantly claimed particle size range, wherein the finer the powder material is, the smaller the striking force is and the surface

roughness is lessened (12:53-68.) Hence, the Sagawa et al reference clearly reads upon the instant claim limitations with respect to the particle filling material fixed with a thermosetting resin wherein the filling material has a particle size of 0.1 to 15 microns. Therefore, the Examiner maintains her position with regards to the obviousness rejections recited above.

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monique R Jackson whose telephone number is 703-308-0428. The examiner can normally be reached on Mondays-Thursdays, 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul J Thibodeau can be reached on 703-308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

M Jackson

Monique R. Jackson
Patent Examiner
Technology Center 1700
June 3, 2003